

**PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of PENNIG

Application No.

Examiner:

Filed: Herewith

Group Art Unit:

For: SURGICAL NAIL AND SCREW FIXATION SYSTEM

**SUBMISSION OF AMENDMENT UNDER ARTICLE 19**


Mail Stop PCT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Please find attached an amendment submitted under Article 19, which formed the annex to the International Preliminary Examination Report. Please note that these claims should be used for examination.

Respectfully submitted,

3-1-05  
Date

  
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Docket No. 7202-79

## AMENDED CLAIMS

[received by the International Bureau on 30 March 2004 (30.03.2004);  
original claims 1-17 replaced by new claims 1-15 (2 pages)]

1. Nail and screw system (1) for improving the fixation of proximal fractures of the humerus, including at least a humeral nail (10) to be inserted in a humeral shaft (9) and comprising at least a proximal transversal hole (6) for the passage of a corresponding locking screws (3), said screw (3) having a screw head (4) and a screw body (31); wherein said transversal hole (6) has an internal partially threaded portion (28) and the corresponding screw (3) has an outside thread diameter smaller than the diameter of said at least one transversal hole (6) that receives such a screw, wherein said nail is cannulated and said transversal hole comprises a couple of opposite holes (6', 6'') on opposite wall of the cannulated nail (10) and at least the hole (6') closer to the screw head (4) includes said partially threaded portion (28), said partially threaded portion (28) being a portion of nut screw or a knurl portion.
2. Nail and screw system according to claim 1, wherein said screw body (31) is fully threaded with a constant pitch (p) and comprises threads (35) having a triangular cross-section profile.
3. Nail and screw system according to claim 2, wherein said triangular cross-section profile has cusp or acute apex angles of 60°.
4. Nail and screw system according to claim 1, further including at least an intermediate plate element (15) inserted between said screw head (4) and the bone cortex surface (14) so that the head (4) is abutting against said plate (15).
5. System according to claim 4, wherein said intermediate plate element (15) includes a slightly curved surface (16) to adhere substantially to the bone cortex surface (14).
6. System according to claim 4, wherein said intermediate plate element (15) comprises a couple of elongated arm portions (18, 19) that are inserted in an astride position on the screw body before the final fastening of the screw head (4).
7. System according to claim 6, wherein said elongated arm portions (18, 19) present rounded ends.
8. System according to claim 4, wherein said intermediate plate element (15) comprises an enlarged portion (21) having at least a seat (22) for embracing at least a fragment fixation pin (23).

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9. System according to claim 8, wherein said seat (22) is at least a hole (22) formed in said enlarged portion (20) of the intermediate plate element (15).
10. System according to claim 8, wherein said seat (22) is at least a hole (24) formed in at least one of said elongated arm portions (18, 19).
11. System according to claim 4, wherein said intermediate plate element (15) has a substantially rounded profile.
12. System according to claim 4, wherein said intermediate plate element (15) is an open washer integrally formed with a flange portion (21).
- 10 13. System according to claim 4, wherein a second intermediate plate element (15') is inserted between the screw head (4) of a second locking screw (3), passing through a second proximal hole (6) of the nail (10), and the bone cortex surface (14).
14. System according to claim 13, wherein said second intermediate plate element (15') is larger than a first intermediate plate element (15).
- 15 15. System according to claim 13, wherein said second intermediate plate element (15) comprises a couple of elongated arm portions (18, 19) that are inserted in an astride position on the corresponding screw body.

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